AMENDMENTS TO THE SPECIFICATION

Amend the specification as follows:

Page 1, after the first paragraph please add the following new paragraph:

The present invention relates to the subject matter contained in Japanese Patent Applications No.2001-398425, filed on December 27, 2001, and, No. 2002-115438, filed on April 17, 2002, which are expressly incorporated herein by reference.

Page 4, last paragraph bridging to page 5:

In order to solve the aforementioned problems, ~~the~~an electrically conductive composition ~~of the present invention~~ is composed of a particulate silver compound and a reducing agent. Silver oxide, silver carbonate or silver acetate and so forth can be used for the particulate silver compound. The average particle diameter of the particulate silver compound is about 0.01-10 μm. The reducing agent is a reducing agent such as ethylene glycol.

Page 5, first and second paragraphs:

The electrically conductive coating formation method ~~of the present invention~~ consists of coating an electrically conductive composition followed by heating.

The electrically conductive coating ~~of the present invention~~ is obtained by the aforementioned formation method, consists of mutually fused silver particles, and has a volume resistivity of about 3- x 10^{-6} Ω·cm to 8 x 10^{-6} Ω·cm. In addition, this electrically conductive coating, when obtained by coating the aforementioned electrically conductive composition

followed by heating for about 30 minutes at about 150-200°C satisfies the following formula (1) when W represents the volume resistivity (Ω·cm) of the electrically conductive coating and X represents its specific gravity.

Page 5, last paragraph bridging to page 6:

Moreover, this electrically conductive coating, when obtained by coating the aforementioned electrically conductive composition followed by heating for about 30 minutes at about 150-200°C satisfies the following formula (2) when Y represents the number of pores of about 100 nm or larger present in a surface area of about 10 μm x 10 μm on the uppermost surface of the electrically conductive coating, and Z represents the heating temperature (°C).

Page 6, second full paragraph:

Fig. 1 is a scanning electron micrograph of the surface of an electrically conductive coating obtained from the electrically conductive composition conforming to an exemplary embodiment of the present invention.

Page 7, heading above the second paragraph:

~~BEST MODE FOR CARRYING OUT~~EXEMPLARY EMBODIMENTS OF THE INVENTION

Page 7, second and third complete paragraphs:

The following provides ~~a~~ detailed ~~explanation~~explanations of exemplary embodiments of the present invention. It is to be understood that this invention is not limited to these exemplary embodiments but by the claims set forth hereinafter.

The particulate silver compound used in the electrically conductive composition ~~of the present invention~~ is a compound in the form of solid particles that has the property of becoming metallic silver when reduced by heating in the presence of a reducing agent.

Page 7, last paragraph bridging to page 8:

The average particle diameter of this particulate silver compound is within the range of about 0.01-10 μm, and can be suitably selected according to the conditions of the reduction reagent such as the heating temperature and reducing strength of the reducing agent. In particular, the use of a particulate silver compound having an average particle diameter of about 0.5 μm or less is preferably since this increases the rate of the reduction reaction.

Page 8, first complete paragraph:

In addition, a particular silver compound having an average particle diameter of about 0.5 μm or less can be produced by a liquid phase method in which silver oxide is obtained by reacting an aqueous alkaline solution such as aqueous sodium hydroxide solution with the product of the reaction with a silver compound and another compound such as an aqueous silver nitrate solution by dropping in while stirring. In this case, a dispersion stabilizer is preferably

added to the solution to prevent aggregation of the precipitated particulate silver compound. In this liquid phase method, the particle diameter can be controlled by changing the silver compound concentration, dispersion stabilizer concentration and so forth.

Page 8, second complete paragraph:

In addition, a vapor phase method can be used to obtain a particulate silver compound having an average particle diameter of about 0.1 μm or less by synthesizing silver oxide by heating a silver halide and oxygen in the vapor phase followed by thermal oxidation.

Page 8, last paragraph bridging to page 9:

The reducing agent used ~~in the present invention~~ is capable of reducing the aforementioned particulate silver compound, and its reaction byproduct following the reduction reaction is preferably a gas or highly volatile liquid which does not remain in the electrically conductive coating that is formed. Specific examples of such reducing agents include ethylene glycol, diethylene glycol, triethylene glycol and ethylene glycol diacetate, and one type or two or more types may be used as a mixture.

Page 9, first full paragraph:

The amount of this reducing agent used is about 20 moles or less, preferably about 0.5-10 moles, and more preferably about 1-5 moles, with respect to about 1 mole of particulate silver compound. When considering reaction efficiency and volatilization by heating, although it is

preferable that the amount used be greater than the equimolar amount, addition in excess of the maximum amount of about 20 moles ends up being wasteful.

Page 10, second complete paragraph:

In addition, secondary aggregation of the particulate silver composition is preferably prevented by adding a dispersant and satisfactorily dispersing a particulate silver compound having an average particle diameter of about 1 μm or less. Dispersants such as hydroxypropyl cellulose, polyvinyl pyrrolidone and polyvinyl alcohol are used for this dispersant, and the amount used is about 0-300 parts by weight to about 100 parts by weight of particulate silver compound.

Page 10, last paragraph bridging over to page 11:

The electrically conductive composition ~~of the present invention~~ consists of dispersing and dissolving the aforementioned particulate silver compound and reducing agent. In addition, a dispersant may also be added as necessary. The average particle diameter of the particulate silver compound used here has no lower limit, that within a range of about 0.01-10 μm does not cause any particular problems, and the reduction reaction proceeds smoothly even in the case of particles of about 1 μm or larger.

Page 11, first and second complete paragraphs:

In addition, although varying according to the conditions of film deposition, the viscosity of this electrically conductive composition is preferably about 30-300 poise in the case of, for example, screen printing.

The usage method of this electrically conductive composition, namely the formation method of the electrically conductive coating ~~of the present invention~~, consists of coating this composition onto a target object by a suitable means, followed by ~~simply by~~ heating. The heating temperature is about 140-160°C depending on the presence of reducing agent, and the heating time is roughly from about 10 seconds to about 120 minutes.

Page 11, fourth paragraph:

In an electrically conductive coating ~~of the present invention~~ obtained in this manner, the particulate silver compound is reduced, and the reduced metallic silver particles mutually fuse to form a continuous, metallic silver thin coating.

Page 11, last paragraph bridging to page 12:

Consequently, the volume resistivity of the electrically conductive coating of the present invention demonstrates a value that reaches about 3- x 10^{-6} Ω·cm to about 8 x 10^{-6} Ω·cm, which is on the same order as the volume resistivity of metallic silver.

Page 12, first complete paragraph:

In addition, since the average particle diameter of the particulate silver compound is about 0.01-10 μm, the line width of an electrical circuit formed by printing this electrically conductive composition on a base material can be made to be about 10 μm or less, and since the electrical conductivity of the circuit itself is extremely high, it is not necessary to increase the thickness of the circuit. Consequently, a circuit can be formed easily and the circuit itself has a high degree of flexibility.

Page 12, last paragraph bridging over to page 13:

Moreover, since the heating temperature for forming an electrically conductive coating only requires a temperature of about 140-160°C, the present invention can be applied to target objects such as plastic film having a low level of heat resistance, which together with allowing the formation of a highly electrically conductive coating, does not lead to thermal degradation of the target object.

Page 12, last paragraph bridging to page 13:

Moreover, since the volume resistivity of the resulting electrically conductive coating is extremely low, sufficient electrical conductivity can be obtained even if the thickness of the coating is extremely thin. The coating thickness can be reduced by an amount corresponding to the decrease in volume resistivity relative to an electrically conductive paste of the prior art. For example, in the case of having used a silver paste having volume resistivity of about 5×10^{-5}

Ω·cm, since volume resistivity of about 3 x 10^{-6} Ω·cm can be realized by the present invention in the case of specifications requiring a circuit having a thickness of about 50 μm, the electrically conductive coating can be made to have a thickness of about 3 μm.

Page 13, second complete paragraph:

In addition, the following relationship was clearly demonstrated to be valid with respect to an electrically conductive coating obtained from the electrically conductive composition ~~of the present invention.~~.

Page 13, last paragraph bridging to page 14:

Namely, when the volume resistivity and specific gravity were measured for an electrically conductive coating obtained by coating the aforementioned electrically conductive composition onto a glass plate or other base material followed by heating for about 30 minutes at about 150-200°C to determine the relationship between these two parameters, the aforementioned formula (1) was clearly determined to be satisfied when W represents the volume resistivity (Ω·cm) of the electrically conductive coating and X represents its specific gravity.

Page 14, second complete paragraph:

In addition, when the number of pores present per unit surface area in the uppermost surface of an electrically conductive film obtained in the same manner were determined by

observing with a scanning electron microscope to determine the relationship between the number of pores and heating temperature, the aforementioned formula (2) was clearly determined to be satisfied when Y represents the number of pores of about 100 nm or larger present over a surface area of about 10 μm x 10 μm in the uppermost surface of the electrically conductive coating, and Z represents the heating temperature (°C).

Page 14, last paragraph bridging over to page 15:

On the basis of this relationship, it was found that the heating temperature should be suitably controlled to form a satisfactory electrically conductive coating having few pores, and that an electrically conductive film having a small number of pores and a high level of electrical conductivity is obtained by heating at about 180-200°C.

The following provides a description of specific examples. However, although the invention will be explained below in more detail by reference to the following Examples, the invention should not be construed as being limited to the following Examples only. It is to be expressly understood, that the Examples and Figures are for purpose of illustration only and are not intended as a definition of the limits of the invention.

Page 15, second complete paragraph:

Next, excess ions were removed by washing the silver oxide 2-5 times with methanol. 0.06-1 g of ethylene glycol (reducing agent) were then added and mixed to produce a paste-like electrically conductive composition ~~of the present invention~~.

Page 15, fourth complete paragraph:

The volume resistivity of the resulting patterns were 3- x 10^{-6} Ω·cm to 6 x 10^{-6} Ω·cm, and observation of the surface with a scanning electron microscope revealed that silver particles that had been reduced and precipitated from the silver oxide had fused and joined together as shown in Fig. 1.

Page 18, third paragraph:

Based on the results of Table 1, although volume resistivity increases the larger the average particle diameter, if the average particle diameter is within the range of 0.01-10 μm, the volume resistivity is on the order of 10^{-6} Ω·cm, thereby allowing the formation of an electrically conductive coating that does not present any problems in terms of practical use.

Page 21, last paragraph bridging over to page 22:

As has been explained above, ~~according to the electrically conductive composition of the present invention,~~ an electrically conductive coating can be obtained that has extremely high electrical conductivity. In addition, since the formation of this electrically conductive coating is sufficiently carried out by heating at a comparatively low temperature, plastic and other materials having a low level of heat resistance can be used for the base material. Moreover, this electrically conductive composition allows the line width of an electrical circuit to be adequately narrow when forming an electrical circuit, and it is not necessary to increase its thickness.

Page 22, last paragraph:

The electrically conductive composition of the present invention ~~is~~may be used as an electrically conductive paste, electrically conductive paint or electrically conductive adhesive and so forth. In addition, it ~~can~~ may also be used to form an electrical circuit of a printed wiring board such as a flexible printed circuit board. Moreover, this electrically conductive coating ~~can~~may also be used as a reflective thin film having high reflectance.

It will be recognized that the compositions and procedures provided in the description can be effectively modified by those skilled in the art without departing from the spirit of the invention embodied in the claims that follow.